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Terms	Documents
tv adj program adj guide	28

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- IBM Technical Disclosure Bulletins

**Refine Search:**[Clear](#)**Search History****Today's Date: 2/2/2001**

<u>DB Name</u>	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u>
USPT	tv adj program adj guide	28	<u>L5</u>
USPT	11 and tv adj program adj guide	1	<u>L4</u>
USPT	11 and program! or tv adj1 guide	1183	<u>L3</u>
USPT	11 and (program! or tv adj1 guide)	1039	<u>L2</u>
USPT	((345/35\$)!.CCLS.)	1308	<u>L1</u>

**Presentation:**

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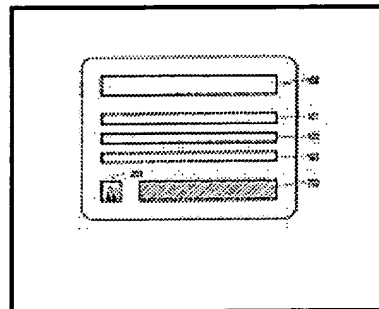
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## PUBLISHED INTERNATIONAL APPLICATION

- (11) **WO 97/02700** (13) A2  
 (21) PCT/IB96/00629  
 (22) **01 July 1996 (01.07.1996)**  
 (25) ENG (26) ENG  
 (31) 95201808.3 (32) **03 July 1995 (03.07.1995)** (33) EP  
 (31) 95202304.2 (32) **25 August 1995 (25.08.1995)** (33) EP  
 (43) 23 January 1997 (23.01.1997)  
 (51)<sup>6</sup> H04N 7/025, 7/52  
 (54) TRANSMISSION OF GRAPHIC IMAGES  
 (71) **PHILIPS ELECTRONICS N.V.** Groenewoudseweg 1, NL-5621 BA Eindhoven ; (NL). [NL/NL]. (*only for SE*) **PHILIPS NORDEN AB** Kottbygatan 7, Kista, S-164 85 Stockholm ; (SE). [SE/SE].  
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 (81) AU, BR, CA, CN, JP, KR ; EP ( AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE )

### Abstract

A method and arrangements for transmitting, receiving and displaying graphic images. The graphic images include dynamic icons (dynacons), i.e. graphic subpictures comprising two or more motion phases. By alternately displaying said motion phases, an attractive motion is created. They enhance the appearance of graphic images considerably. This is especially useful in the transmission of an electronic television program guide, e.g. to indicate the type of television programs to come.





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## PUBLISHED INTERNATIONAL APPLICATION

- (11) **WO 99/11060** (13) A1  
 (21) PCT/US97/12589  
 (22) **27 August 1997 (27.08.1997)**  
 (25) ENG (26) ENG  
 (43) 04 March 1999 (04.03.1999)  
 (51)<sup>6</sup> H04N 5/445  
 (54) ELECTRONIC TELEVISION PROGRAM GUIDE SCHEDULE SYSTEM  
 AND METHOD WITH SCAN FEATURE  
 (71) **NEWS AMERICA PUBLICATIONS, INC.** 1211 Avenue of the Americas,  
 New York, NY 10036 ; (US). [US/US].ORM=  
**TELECOMMUNICATIONS OF COLORADO, INC.** 1519 DTC  
 Parkway, Englewood, CO 80111-3000 ; (US). [US/US].  
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**DAVIS, Bruce** 5505 Preserve Parkway South, Greenwood Village, CO  
 80121 ; (US). **KNUDSON, Edward, Bruce** 11055 W. Rowland Avenue,  
 Littleton, CO 80127 ; (US).  
 (74) **RIZZI, Steven, J.** Weil, Gotshal & Manges LLP, 767 Fifth Avenue, New  
 York, NY 10153 ; (US).  
 (81) AU, BR, CA, CN, JP, KR, PL ; EP ( AT, BE, CH, DE, DK, ES, FI, FR, GB,  
 GR, IE, IT, LU, MC, NL, PT, SE )

No Image Available.

**Abstract**

An electronic program schedule system which utilizes a receiver for receiving broadcast, satellite or cablecast television programs for a plurality of television channels and a tuner for tuning a television receiver to a selected one of the plurality of channels. A data processor receives and stores in a memory television program schedule information for a plurality of television programs to appear on the plurality of television channels. A user control apparatus, such as a remote controller, is utilized by a viewer to choose user control commands and transmit signals in response to the data processor which receives the signals in response to user control commands. A television receiver is used to display the television programs and television program schedule information. A video display generator receives video control commands from the data processor and program schedule information from the memory and displays a portion of the program schedule information in overlaying relationship with a television program appearing on a television channel in at least one mode of operation of the television programming guide. The data

in at least one mode of operation of the television programming guide. The data processor controls the video display generator with video control commands, issued in response to the user control commands, to display program schedule information for any chosen one of the plurality of television programs in overlaying relationship with at least one television program then appearing on any chosen one of the plurality of channels on the television receiver. The system includes a scan feature to permit the user to scan program schedule listings for multiple programs in any of the operational modes of the system with the issuance of a single user control command.

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IBM Technical Disclosure Bulletins	▼

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[Clear](#)**Search History**

Today's Date: 2/2/2001

<u>DB Name</u>	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u>
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USPT	11 and program! or tv adj1 guide	1183	<u>L3</u>
USPT	11 and (program! or tv adj1 guide)	1039	<u>L2</u>
USPT	((345/35\$)!.CCLS.)	1308	<u>L1</u>

Searching PCT.vdb...

[Search Summary]

Results of searching in PCT.vdb for:

"electronic television program guide": 6 records

Showing records 1 to 6 of 6 :

Refine Search

"electronic television program guide"

Title

1. (WO 00/56065) SYSTEM AND METHOD OF CHANNEL MAP CORRECTION IN AN EPG
2. (WO 99/25119) INTERACTIVE *ELECTRONIC TELEVISION PROGRAM GUIDE* WITH DATABASE CONFIGURABILITY
3. (WO 99/11060) *ELECTRONIC TELEVISION PROGRAM GUIDE* SCHEDULE SYSTEM AND METHOD WITH SCAN FEATURE
4. (WO 97/50251) IMPROVED *ELECTRONIC TELEVISION PROGRAM GUIDE* SCHEDULE SYSTEM AND METHOD WITH POP-UP HINTS
5. (WO 97/27705) TRANSMISSION OF DATA ITEMS
6. (WO 97/02700 ) TRANSMISSION OF GRAPHIC IMAGES

Search Summary

"electronic television program guide": 6 occurrences in 6 records.

Search Time: 0.19 seconds.



## Search History for ecolbert

File	Status	Query	Database	Hits	Time
<input type="checkbox"/>	7	"electronic television program guide"	PCT.vdb	6	02.02.2001 15:17:26
<input type="checkbox"/>	1	"tv program guide"	PCT.vdb	0	02.02.2001 14:41:52

Marking an entry already marked *Save* or *Update* will remove the mark for that entry.

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International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup>:</b> <b>H04N 7/173</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 97/50251</b> <b>(43) International Publication Date:</b> 31 December 1997 (31.12.97)
<b>(21) International Application Number:</b> PCT/US97/09703 <b>(22) International Filing Date:</b> 24 June 1997 (24.06.97)  <b>(30) Priority Data:</b> 08/668,930      24 June 1996 (24.06.96)      US  <b>(71) Applicants:</b> NEWS AMERICA PUBLICATIONS, INC. [US/US]; 1211 Avenue of the Americas, New York, NY 10036 (US). TELECOMMUNICATIONS OF COLORADO, INC. [US/US]; 1519 DTC Parkway, Englewood, CO 80111-3000 (US).  <b>(72) Inventors:</b> DAVIS, Bruce; 5505 Preserve Parkway South, Greenwood Village, CO 80121 (US). ELLIS, Michael, Dean; 1300 Kingwood Place, Boulder, CO 80304 (US). KNUDSON, Edward, Bruce; 11055 W. Rowland Avenue, Littleton, CO 80127 (US). MILLER, Larry; 35 Glenmore Drive, Greenwood Village, CO 80111 (US).  <b>(74) Agent:</b> RIZZI, Steven, J.; Weil, Gotshal & Manges LLP, 767 Fifth Avenue, New York, NY 10153 (US).	<b>(81) Designated States:</b> AU, BR, CA, CN, JP, KR, PL, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>	
<b>(54) Title:</b> IMPROVED ELECTRONIC TELEVISION PROGRAM GUIDE SCHEDULE SYSTEM AND METHOD WITH POP-UP HINTS  <b>(57) Abstract</b>  An electronic program schedule system which includes a receiver for receiving broadcast, satellite or cablecast television programs for a plurality of television channels and a tuner for tuning a television receiver to a selected one of the plurality of channels. A data processor receives and stores in a memory television program schedule information for a plurality of television programs to appear on the plurality of television channels. A user control apparatus, such as a remote controller, is utilized by a viewer to choose user control commands and transmit signals in response to the data processor which receives the signals in response to user control commands. A television receiver is used to display the television programs and television program schedule information. A video display generator receives video control commands from the data processor and program schedule information from the memory and displays a pop-up hint in overlaying relationship with the program schedule information in at least one mode of operation of the television programming guide. The data processor controls the video display generator with video control commands, issued in response to the user control commands, or in response to a predetermined period of user inactivity to display pop-up hints for the user's current position in the guide in overlaying relationship with the program schedule information.		





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## PUBLISHED INTERNATIONAL APPLICATION

- (11) **WO 97/50251** (13) A1  
 (21) PCT/US97/09703  
 (22) **24 June 1997 (24.06.1997)**  
 (25) ENG (26) ENG  
 (31) 08/668,930 (32) **24 June 1996 (24.06.1996)** (33) US  
 (43) 31 December 1997 (31.12.1997)  
 (51)<sup>6</sup> H04N 7/173  
 (54) IMPROVED ELECTRONIC TELEVISION PROGRAM GUIDE  
 SCHEDULE SYSTEM AND METHOD WITH POP-UP HINTS  
 (71) **NEWS AMERICA PUBLICATIONS, INC.** 1211 Avenue of the Americas,  
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**TELECOMMUNICATIONS OF COLORADO, INC.** 1519 DTC  
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 (74) **RIZZI, Steven, J.** Weil, Gotshal & Manges LLP, 767 Fifth Avenue, New  
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 (81) AU, BR, CA, CN, JP, KR, PL ; EP ( AT, BE, CH, DE, DK, ES, FI, FR, GB,  
 GR, IE, IT, LU, MC, NL, PT, SE )

No Image Available.

**Abstract**

An electronic program schedule system which includes a receiver for receiving broadcast, satellite or cablecast television programs for a plurality of television channels and a tuner for tuning a television receiver to a selected one of the plurality of channels. A data processor receives and stores in a memory television program schedule information for a plurality of television programs to appear on the plurality of television channels. A user control apparatus, such as a remote controller, is utilized by a viewer to choose user control commands and transmit signals in response to the data processor which receives the signals in response to user control commands. A television receiver is used to display the television programs and television program schedule information. A video display generator receives video

television program schedule information. A video display generator receives video control commands from the data processor and program schedule information from the memory and displays a pop-up hint in overlaying relationship with the program schedule information in at least one mode of operation of the television programming guide. The data processor controls the video display generator with video control commands, issued in response to the user control commands, or in response to a predetermined period of user inactivity to display pop-up hints for the user's current position in the guide in overlaying relationship with the program schedule information.

# INTERNATIONAL SEARCH REPORT

Inter. Appl. Application No.

PCT/US 97/09703

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>KINGHORN J R: "ENHANCED ON-SCREEN DISPLAYS FOR SIMPLER TV CONTROL" 1 August 1992 , IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, VOL. 38, NR. 3, PAGE(S) 725 - 733 XP000311917</p> <p>see page 731, right-hand column, line 1 - page 732, left-hand column, line 11; figures 17,18</p> <p>-----</p>	<p>1,11,18, 19,22, 24, 32-34, 41,48, 49,52, 53,56,61</p>

# INTERNATIONAL SEARCH REPORT

Information on patent family members


International Application No

PCT/US 97/09703

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9414282 A	23-06-94	AU 5732994 A	04-07-94
		AU 5733094 A	04-07-94
		AU 5733194 A	04-07-94
		AU 5733294 A	04-07-94
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		JP 8510869 T	12-11-96
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- 
- ☐ 1 **Apparatus and method for use in a digital cable headend for cable television delivery system** - European Patents Fulltext - *US\$7.05*
  - ☐ 2 **REPROGRAMMABLE TERMINAL FOR SUGGESTING PROGRAMS OFFERED ON A TELEVISION PROGRAM DELIVERY SYSTEM - TERMINAL REPROGRAMMABLE DESTINE A SUGGERER DES PROGRAMMES PRESENTES DANS UN SYSTEME DE DIFFUSION DE PROGRAMMES DE TELEVISION** - Word Count: 24225 - 1994 - WIPO/PCT Patents Fulltext - *US\$6.90*
  - ☐ 3 **TELEVISION PROGRAM DELIVERY SYSTEM - SYSTEME DE DIFFUSION DE PROGRAMMES DE TELEVISION** - Word Count: 16728 - 1994 - WIPO/PCT Patents Fulltext - *US\$6.90*
  - ☐ 4 **SET TOP TERMINAL FOR CABLE TELEVISION DELIVERY SYSTEMS - TERMINAL PRIVE PLACE SUR UN RECEPTEUR DE TELEVISION POUR SYSTEMES DE DIFFUSION DE PROGRAMMES DE TELEVISION PAR CABLE** - Word Count: 30797 - 1994 - WIPO/PCT Patents Fulltext - *US\$6.90*
  - ☐ 5 **AN OPERATION CENTER FOR A TELEVISION PROGRAM PACKAGING AND DELIVERY SYSTEM - CENTRE D'EXPLOITATION D'UN SYSTEME DE DIFFUSION ET DE GROUPEGE DE PROGRAMMES DE TELEVISION** - Word Count: 27156 - 1994 - WIPO/PCT Patents Fulltext - *US\$6.90*
  - ☐ 6 **NETWORK CONTROLLER FOR CABLE TELEVISION DELIVERY SYSTEMS - UNITE DE COMMANDE DE RESEAU POUR SYSTEMES DE DIFFUSION DE PROGRAMMES DE TELEVISION PAR CABLE** - Word Count: 25974 - 1994 - WIPO/PCT Patents Fulltext - *US\$6.90*
  - ☐ 7 **DIGITAL CABLE HEADEND FOR CABLE TELEVISION DELIVERY SYSTEM - TETE DE CABLE A TECHNOLOGIE NUMERIQUE POUR SYSTEME DE DISTRIBUTION DE TELEVISION PAR CABLE** - Word Count: 15282 - 1994 - WIPO/PCT Patents Fulltext - *US\$6.90*
  - ☐ 8 **ADVANCED SET TOP TERMINAL FOR CABLE TELEVISION DELIVERY SYSTEMS - TERMINAL PRIVE PERFECTIONNE POUR SYSTEMES DE DIFFUSION DE PROGRAMMES DE TELEVISION PAR CABLE** - Word Count: 27886 - 1994 - WIPO/PCT Patents Fulltext - *US\$6.90*
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Powered by  DIALOG**TRANSMISSION OF GRAPHIC IMAGES  
TRANSMISSION D'IMAGES GRAPHIQUES****Patent Applicant/Assignee:**PHILIPS ELECTRONICS NV  
PHILIPS NORDEN AB**Inventors:**CLARK-SCHREYER Veronika  
ERKINGER Erwin**Patent and Priority Information (Country, Number, Date):****Patent:** WO 9702700 A2-A3 19970123**Application:** WO 96IB629 19960701 (PCT/WO IB9600629)**Priority Application:** EP 95201808 19950703; EP 95202304 19950825**Designated States:**

AU BR CA CN JP KR AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE

**International Patent Class (Main):** H04N-007/025;**International Patent Class:** H04N-007/52; H04N-007/088; H04N-005/445;**Publication Language:** English

**English Abstract:** A method and arrangements for transmitting, receiving and displaying graphic images. The graphic images include dynamic icons (dynacons), i.e. graphic subpictures comprising two or more motion phases. By alternately displaying said motion phases, an attractive motion is created. They enhance the appearance of graphic images considerably. This is especially useful in the transmission of an electronic television program guide, e.g. to indicate the type of television programs to come.

**French Abstract:** Cette invention concerne un procede et des dispositifs de transmission, de reception et d'affichage d'images graphiques. Ces images graphiques comportent des icones dynamiques (dynacones), c'est a dire des sous-images graphiques comportant deux phases de mouvement ou plus. En affichant par alternance ces phases de mouvement, on cree ainsi un mouvement attrayant. Ces phases de mouvement permettent d'ameliorer considerablement l'apparence des images graphiques. Ce systeme est particulierement utile dans la transmission d'un guide electronique d'emissions televisees, par exemple afin d'indiquer la nature d'emissions televisees ulterieures.

**Detailed Description:**

Transmission of graphic images.

The invention relates to a method of transmitting graphic images, comprising the step of transmitting data defining pixels of a displayable subpicture, and the step of transmitting data invoking said subpicture for display on a receiver. The invention also relates to a television receiver and a display device for receiving and displaying said graphic images.

A method of transmitting graphic images is generally known as teletext.

Herein, images are transmitted in the form of pages, each page comprising a plurality of character codes defining the alphanumeric and graphical characters of said page. Pixel patterns defining the commonly used characters are stored in a read-only memory section of the receiver. The known arrangements render it possible for characters, or series of characters, to "flash", i.e. to be concealed and revealed at a predetermined frequency. This allows a dynamic effect to be added to a page.

More sophisticated teletext systems (level 3) provide a feature usually referred to as "Dynamically Redefinable Character Sets". This feature allows a page editor to define the pixel pattern of characters at the transmitter end, and to download said patterns to the receiver for storage in a random access memory prior to the transmission of the page.

It is an object of the invention to further improve the appearance of an image on screen.

According to the invention, the method is characterized in that the step of transmitting pixel defining data includes the transmission of pixel defining data for at least two motion phases of said subpicture to be displayed cyclically. The transmission step may include the transmission of a time code representing a time interval between displaying the successive motion phases of said subpicture. The graphic image can thus be enhanced with dynamic icons ("dynacons").

Fig. 1 shows a system comprising a transmitter and a receiver according to the invention.

Fig. 2 shows a flow diagram of transmission steps executed by the transmitter of Fig. 1.

Figs. 3-7 show examples of subpictures having different motion phases for display by the receiver shown in Fig. 1.

Fig. 8 shows an image to be displayed by the receiver of Fig. 1.

Fig. 9 shows a flow chart of operations carried out by a microprocessor shown in Fig. 1.

Figs. 10-12 show embodiments of the display section of the receiver shown in Fig. 1.

The invention will now be described with reference to the transmission of menus for accessing a (separately transmitted) electronic TV programme guide. The invention, however, is not restricted to this application. Fig. 1 shows a system comprising a transmitter 1 and a receiver 2 according to the invention. The transmitter comprises an editing terminal 11 for creating textual and graphical information, a processor 12, a memory 13 for storing the information, and a page composer 14 for packing the information into teletext pages TXT. The transmitter further comprises a teletext inserter 15 for inserting the teletext pages in the flyback period of a composite video signal CVBS. The thus obtained television signal is applied to a modulator 16 for broadcast over a transmission medium 3.

The receiver comprises a tuner 21 for receiving the television signal. The received signal is directly

applied to a television monitor 22 so as to display the television programme. The signal is also applied to a teletext data decoder 23 which is adapted to acquire selected teletext pages and to store them in a memory 24. A microprocessor 25 is connected to decoder 23 so as to apply the relevant page numbers, and is further connected to the memory 24 so as to process the information stored therein. The receiver further comprises a graphic generator 26 adapted to read a predetermined display segment of memory 24 and to generate an On-Screen-Display picture OSD defined by data stored in said memory segment. The OSD picture includes a cursor, the position of which is defined by the microprocessor in response to positioning signals from a remote cursor control device 27.

In practice, the receiver described above may take the form of a videorecorder. The videorecorder may have an embedded display device 22 or an output for applying the display signals CVBS and OSD to a separate display device 22 such as a television set.

### Operation of the transmitter

The electronic programme guide as well as the menus for accessing and presenting the programme guide are created by editorial staff using editing terminal 11. The information is processed by processor 12 and stored in various segments of memory 13.

Each memory segment defines an amount of data which will further be referred to as a section of the database. The page composer 14 packs each section in one or more teletext pages. As the teletext pages are not intended for direct display, they have hexadecimal page numbers. Data which is most sensible data to transmission errors, such as headers, dates and times, string lengths, teletext page numbers, etc., are protected by a Hamming code. The first teletext page has a predetermined page number (e.g. 3AO) and contains a table of content. This is a list of teletext page numbers carrying the data stream. If the table of content does not fit in one teletext page, a reference to subsequent teletext pages is made.

Fig. 2 shows a flow diagram of transmission steps executed by the transmitter of Fig. 1. Each step represents the transmission of a section of the database. Each section relates to a certain functionality and comprise data items such as parameters, values, text strings, attributes, etc. In a step 31, a Basic Info section is transmitted comprising basic data such as date and time and some other general data so as to ease the management of memory in a television receiver. In a step 32, a Layout Info section is transmitted defining a variety of design tools for composing the electronic programme guide. In a step 33, a Graphics section is transmitted in which a plurality of graphic subpictures is defined for display on screen. In a step 34, a MenuInfo section is transmitted conveying the menus for accessing the program guide. In a step 35, a Programme Info section is transmitted for building up the TV programme guide database. The transmission of the database ends with a step 36 of transmitting an End-of-Protocol code. The database is transmitted regularly, e.g. a few times per day.

The sections will now be described in more details. As not all sections are equally essential to the invention, some sections will only briefly be discussed. In the following description, sections are shown in double framed boxes. A collection of data items in a section may constitute a block. Blocks are shown in single framed boxes. A ++ symbol is placed next to a data item or block if it is repeatedly transmitted. For example, a section:

item-1

item 2

item-3 ++



comprises three data items of which the block comprising item - 2 and item-3 may be repeated. Each section starts with a header. This is a code identifying the section and indicating its beginning. The type of the data items (such as byte, character, string) is not given here because it is not essential to the invention.

#### The section Basic Info

This section comprises basic data such as date and time and some other general data so as to ease the management of memory in a television receiver. The Basic Info section has the following format:

#### BASIC HEADER

date

time

no-programmes

no-menuitems

no-graphics

poolsize

Herein, date and time represent the date and time of issue of the database. No-programmes is the number of television programmes contained in the Programme Info section.

No-menuitems is the number of menu items in the Menu Info section. No graphics is the or total number of graphics, including the logos defined in the Table Info section. Poolsize is the total size of all the titles, programme infos and descriptions and criteria names.

#### The section Layout Info

This section gives a variety of design tools to the supplier of the electronic programme guide. The format of this section is:

#### LA Y O U T H 5 4 D E R

no o lours

- !f-CO

colour+ +

screen size

no o rrgmts

- f p no o levels

- f

level

layout data ++ ++

No o

- f colours and colour++ define the length and contents, respectively, of a colour look up table. By default, a standard teletext colour table is used. The rest of the section specifies the appearance of the various menus on screen. Screensize gives the full screen size in pixels, in horizontal and vertical direction. Because the menus are organized in a tree structure, each menu is assigned a level of which there are no o levels available. As will be described later, two menus of different levels may be displayed simultaneously. This is referred to as an "arrangement". The number of arrangements is specified by no o a -f arrgmnts. The item layout-d ta is a block of data defining features such as height, font, colours, position, spacing, etc., of headlines and menu items of the menu.

The section Graphics

In this section, one or more graphic subpictures (hereinafter also referred to as "graphics" for short) are defined which can be displayed on screen. The general format of this section is:

GRMC HEADER

no-grpics

grphe~~no

graphic ++

Herein, no-grpics gives the number of graphics defined in the section. Grphc~~no is an index number for invoking the subpictures. The data item graphic itself is a block of data defining a rectangular subpicture. Four types of graphics are being distinguished in this protocol:

bitmaps, symbols, dynacons, and text strings. A bitmap is the general term for a graphic. It is a rectangular matrix of pixels forming a subpicture. Symbols and dynacons are bitmaps as well, but with special conventions. Symbols are intended for use within text strings. A text including a symbol comprises an escape character followed by graphic-no to invoke the symbol. Dynacons consist of a predefined sequence of 2 or more bitmaps. Each bitmap represents one motion phase of the dynacon. By cyclically displaying said motion phases, the viewer sees one bitmap after the other, which becomes manifest as a simple animation of the subpicture. The period of time during which each phase is to be displayed can be fixed in the receiver, or may be transmitted as a data item in the section. A dynacon with one single phase is a symbol. The phases "overload" the colour table, per phase there is one complete colour table as common from a bitmap. Dynacons can be used like symbols. Figs. 3-7 show examples of dynacons, each having two motion phases. The two motion phases shown in Fig. 3 give an impression of blinking eyes for drawing the user's attention to a particular piece of information. Figs. 4-7 are intended to be added to a preview of a television programme. Fig. 4 represents a movie, Fig. 5 represents a programme for children, Fig. 6 a live performance, and Fig. 7 shows two phases giving an impression of flapping wings so as to represent a documentary film about the bird's life.

## TABLE ID

The following data was for the inabi inenu Screen Type Template File Description SCREEN  
 '@MAIN 'main menu.pcx -Main Menu Justify X Y Ht Wd FColor BColor Font STRPOS 'Left '165 '85  
 '30 '300 '27 55 FUTUR14.GFr STRING 'MAIN MENU Justify XY Hght Wdt PCX POS 'LEFT '190 '75  
 '200 '200 PCX emunoe.yocs

Justify X Y HtWd FColor BColor Font X Y Ht Wd ITEM POS 'Left '120 '100 '20 '400 15 05  
 FUTUR12.GFT '110'90'30-42?5 ITEM'@YCTV'YOUR CHOICE TV Justify X Y Ht Wd FCoWrBCokr  
 Font X Y A 'WWd rrEM POS 'Left '120 '200 '20 '400 '15 -25 FUTURUM '110'190031944210 17 M  
 '@PPV-PAY-PER-VIEW Hrr MOVIES As shown at block 878 in Figure 9c, initially the microprocessor  
 602 instructs the tuner 603 to select a channel. The channel is decompressed, error corrected and  
 decrypted, if necessary. If the video is to be reduced in size, so as to be placed within a video window, or  
 is a split screen video window which must be enlarged, the video is scaled to the appropriate size.  
 Additionally, the video maybe required to be redirected to a portion of the television screen,  
 accomplished by creating a series of offsets for each pixel location of the video.

Graphics must also be used to create a menu in most instances. As shown in block 882, the  
 microprocessor 602 must fetch a background file, a logo file, and a menu display and cursor file in most  
 instances. Each of these files is decompressed 883, and then combined, block 886.

Similarly, the microprocessor 602 must fetch text, as shown in block 884. Depending upon the memory  
 location of the text, the microprocessor 602 will fetch the text from long-term, intermediate -term, or  
 short-term storage, as described above. Based upon dos memory retrieval, the text is generated, block  
 885, and combined with the video (if any), with as many screens of a decompressed graphics as are  
 necessary% and any text, block 886. The image or portions of the image are stored in the video  
 combiner (for example, combiner 624 of Figure 4) until all overlays are received.

Thereafter, the entire image is sent, under direction of another routine, to be displayed on the television  
 screen, as represented by display block 888.

The terms and descriptions used herein are set forth by way of illustration only and are not meant as  
 limitations.

Those skilled in the art will recognize that numerous variations are possible within the spirit and scope of  
 the

invention as defined in the following CLAIMS CQUAIMMSS

What is claimed is:

1. A television program delivery and program selection system offering a plurality of television programs  
 for selection by a subscriber, using a program control information signal carrying data on packaging of  
 the plurality of the television programs and using computer program instructions stored at each subscriber  
 location to present options on a menu displayed on a television, the system comprising:

an operations center for packaging the plurality of television programs and for generating the program  
 control information signal that includes data on the packaging of the plurality of the television programs;  
 means for delivering the packaged plurality of the television programs and the program control  
 information signal from the operations center to a subscriber; means for generating menus with the

options for display using the computer program instructions; and, means for selecting at least one of the delivered packaged television programs for display on the television using the options on the generated menus.

2. The system of claim 1, wherein specific data and information about the television programs is used and wherein the operations center comprises:

means for receiving the plurality of television programs; input means for receiving the information about each of the plurality of television programs:

database means for storing and supplying the specific data about the television programs; means for generating the program control information signal based on the information from the input means and the specific data from the database means; and means for combining the plurality of television programs and the program control information signal for transmission by the delivering means.

3. The system of claim 1, wherein the operations center performs bandwidth allocation and the wherein the operations center comprises processing means for controlling the content of the program control information signal, the processing means comprising:

means for creating program lineups for

transmission to subscribers;

means for prioritizing the programs based on a plurality of factors including popularity of the program, its weighted importance and bandwidth available to the viewers to receive the plurality of television programs; means for allocating bandwidth so that different programs are delivered to different viewers; and means for creating and changing menus with different programs described for different viewers using the prioritizing means and the allocation means.

4. The system of claim 1, wherein the operations center comprises means for generating a category designation for each television program.

5. The system of claim 1, wherein the selecting means comprises:

a means for choosing one of the options on the generated menus; and a means for sequencing the computer program instructions based on the chosen option.

6. The system of claim 1 capable of menu generation using the computer program instructions, menu content data, and data carried on the program control information signal including program identification and menu location for each program identification, wherein the generating means comprises:

means for receiving the plurality of television programs and the program control information signal containing the program identification and menu locations:

a microprocessor for executing the computer program instructions for prompting the generation of menus; menu memory means, connected to the microprocessor, for storing information used to generate menus, the stored information including the program identification and menu locations; means, connected to the microprocessor, for generating the menus from the stored information in the menu memory means when prompted by the microprocessor; and means for commanding the microprocessor to prompt the menu generating means to generate the menus for display.

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7. The system of claim 6, wherein the commanding means comprises a remote control for remotely commanding the microprocessor.

8. A menu-driven television program selection system offering a plurality of television programs for selection by a subscriber, using a program control information signal carrying programming data on packaging of the plurality of the television programs, also using computer program instructions stored at each of a plurality of subscriber locations to present options on a menu displayed on a television and to receive upstream data signals from subscriber locations at a cable headend, the system comprising:

an operations center for packaging the plurality of television programs and for generating the program control information signal, wherein the packaged plurality of television programs and the program control information signal are transmitted to each cable headend for distribution to the plurality of subscriber locations; a network controller, located at each cable headend, for receiving and processing the packaged plurality of television programs and the program control information signal and for receiving the upstream data signals from the plurality of subscriber locations:

a means for, distributing the packaged plurality of television programs and the program control information signal from the cable headend to each of the plurality of subscriber locations; and a set top terminal at each of the plurality of subscriber locations for receiving the packaged television programs and the program control information signal from the distributing means, wherein the set top terminal comprises:

a means for selecting one of the

packaged plurality of television programs from the displayed menus using the program control information signal and the computer program instructions; a means for generating the upstream data signals using; the computer program instructions; and a means for transmitting the upstream data signals to the network controller at the cable headend.

9. The system of claim 8, wherein the selecting means comprises:

an electronic memory for storing the computer program instructions:

a processor for sequencing through the computer program instructions and for transforming the program control information signal into the menus to be displayed on the television utilizing the sequenced computer program instructions; and a subscriber interface for choosing one of the options from the displayed menus, wherein the chosen options effect the sequencing of the computer program instructions.

10. The system of claim 8, wherein the packaged television programs are grouped by program category and wherein the means for selecting comprises means for choosing a program category with each category being accessible by choosing its corresponding option from the displayed menu.

11. The system of claim 8, wherein the displayed menus are multi-leveled and wherein the means for selecting comprises a means for displaying multi-leveled menus so that the options chosen from the user interface may be used to display another menu.

12. The system of claim 8 capable of processing programs watched information, wherein the network controller comprises means for processing the upstream data signals that include the programs watched information.

13. The system of claim 8 capable of providing interactive communications between the cable headend and the plurality of subscriber locations, wherein the network controller comprises means for processing the upstream data signals that include the interactive communications.

14. A menu-driven cable television selection system offering a plurality of television programs for selection by a subscriber, using a program control information signal carrying programming data on packaging of the plurality of the television programs, also using computer program instructions at each of a plurality of subscriber locations to present options on a menu displayed on a television and to compile programs watched data that is subsequently gathered at each cable headend, the system comprising:

an operations center for packaging the plurality of television programs and for generating the program control information signal, wherein the packaged plurality of television programs and the program control information signal are transmitted to each cable headend for distribution to the plurality of subscriber locations; a means, located at each cable headend, for distributing the packaged plurality of television programs and the program control information signal to the plurality of subscriber locations:

a means, connected to the distributing means, for monitoring and controlling each set top terminal at each of the plurality of subscriber locations; a means, located at the plurality of subscriber locations, for receiving the packaged plurality of television programs and the program control information signal from each cable headend; a means, connected to the receiving means, for storing computer program instructions:

a means, connected to the storing means, for sequencing the stored computer program instructions to generate and display the menus, wherein the sequencing means uses the programming data carried by the program control information signal; a subscriber interface for choosing one of the options on the menus, wherein the chosen option effects the sequencing of the stored computer program instructions by the sequencing means; a means for compiling the programs watched data using the chosen options that correspond to the selecting of one of the packaged plurality of television programs offered; a means, at each of the subscriber locations, for reporting the compiled programs watched data to each cable headend; and a means, located at each cable headend and connected to the monitoring and controlling means, for gathering the compiled programs watched data reported from each of the plurality of subscriber locations.

15. The system of claim 14 capable of modifying the data on the program control information signal using network control data stored at the cable headend to produce a modified program control information signal, wherein the monitoring and controlling means comprises:

o means for storing the network control data; o means for interpreting data from the program control information signal to determine the program identification and menu locations:

a means for modifying the interpreted data based on the stored network control data; and a means for creating the modified program control information signal based on the modified 25 interpreted data.

16. The system of claim 14 capable of polling each subscriber location for the compiled programs watched data, wherein the gathering means comprises:

a means for extracting data from the program control information signal to determine the program identification and menu locations:

a means for creating a polling request message that requests the reporting means to send the programs watched information to the cable headend; and a means for processing the reported programs watched information.

17. The system of claim 16, wherein the processing means comprises:

a means for storing the reported programs watched information to produce stored programs watched data; a means for accessing the stored programs watched data; a means for determining the programs most frequently watched based on the stored programs watched data; a means for correlating advertisements that correspond to those programs most frequently watched to produce targeted advertisements:

a means for sending the targeted advertisements to the distributing means for packaging and distribution to the plurality of subscriber locations.

18. The system of claim 16 capable of generating and maintaining account and billing information for each subscriber, wherein the processing means comprises:

a means for storing the reported programs watched information to produce stored programs watched data; a means for accessing the stored programs watched data:

a means for producing the account and billing information based on the stored programs watched data.

19. A digitally compressed program delivery system to provide subscribers with menu selection of a plurality of television programs using a plurality of analog program signals and a program control information signal received at each cable headend for further transmission, each cable headend transmitting to each subscriber a control information stream and programming signals carrying the plurality of the television programs, the menus generated and displayed using the control information stream and menu templates stored at each subscriber location, the system comprising:

means for digitally compressing a plurality of analog program signals to produce digitally compressed signals:

means for generating the program control information signal; means for packaging each of the digitally compressed signals and the program control information signal to produce a packaged signal:

means for transmitting the packaged signal to each cable headend for processing; means for processing the packaged signal to produce the control information stream and the programming signals; means for distributing the control information stream and the programming signals to each subscriber location for generation and display of the menus using the stored menu templates and the control information stream; and subscriber interface means for selection of any one of the plurality of television programs using one or more of the generated and displayed menus.

20. The compressed program delivery system of claim 19 capable of using digital program signals, wherein the means for digitally compressing comprises means to compress digital program signals so that the digitally compressed signals are reproduced from the plurality of analog program signals and the digital

program signals.

21. The compressed program delivery system of claim 19 capable extracting control information and selecting individual programs from the packaged signal, wherein the processing means comprises:

o means for receiving the packaged signal; o means for demultiplexing the packaged signal into the control information and the individual programs:

a means for selecting some of the individual programs:

a means for combining the selected individual programs to produce the programming signals; and a means for modifying the control information to produce the control information stream.

22. The compressed program delivery system of claim 21 capable of distributing regional programs, wherein the combining means comprises means for adding the regional programs to the selected individual programs to produce the programming signals.

23. The compressed program delivery system of claim 19 capable of delivering analog signals to each subscriber location, wherein the distributing means comprises a digital to-analog conversion means for converting the programming signals to analog signals for distribution to each subscriber location.

24. The system of claim 19 capable of processing regional programming information, wherein the processing means comprises a network controller for modifying the program control information to include regional programming information, wherein the modified program control information is used to produce the control information stream.

25. A method for offering a plurality of television programs for selection by a subscriber, using a program control information signal carrying data on packaging of the plurality of the television programs and using computer program instructions stored at each subscriber location to present options on a menu displayed on a television, the method comprising the steps of packaging the plurality of television programs; generating the program control information signal that includes data on the packaging of the plurality of the television programs; delivering the packaged plurality of the television programs and the program control information signal to a subscriber; generating menus with the options for display menus using the computer program instructions; and, selecting at least one of the delivered packaged television programs for display on the television using the options on the generated menus.

26. A method for offering a plurality of television programs for selection by a subscriber, using a program control information signal carrying programming data on packaging of the plurality of the television programs, also using computer program instructions at each of a plurality of subscriber locations to present options on a menu displayed on a television and to compile program watched data that is subsequently gathered at each cable headend, the method comprising the steps of.

packaging the plurality of television programs:

generating the program control information signal, wherein the packaged plurality of television programs and the program control information signal are transmitted to each cable headend for distribution to the plurality of subscriber locations; distributing the packaged plurality of television programs and the program control information signal to the plurality of subscriber locations; monitoring and controlling each set top terminal at each of the plurality of subscriber locations; receiving the packaged plurality of television programs and the program control information signal from each cable headend; storing

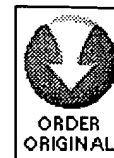


computer program instructions; sequencing the stored computer program instructions to generate and display the menus, wherein thesequencing uses the programming data carried by the program control information signal; choosing one of the options on the menus, wherein the chosen option effects the sequencing of the stored computer program Instructions by the sequencing step; compiling the programs watched data using the chosenoptions that correspond. to the selecting of one of the packaged pluralityof television programs offered; reporting the compiled programs watched data to each cable headend; and gathering the compiled programs watched data reported from each of the plurality of subscriber locations.

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**ELECTRONIC TELEVISION PROGRAM GUIDE SCHEDULE SYSTEM AND METHOD  
WITH SCAN FEATURE  
GUIDE ELECTRONIQUE DE PROGRAMMATION D'EMISSIONS DE TELEVISION,  
SYSTEME ET TECHNIQUE DE RECHERCHE AUTOMATIQUE**

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**English Abstract:** An electronic program schedule system which utilizes a receiver for receiving broadcast, satellite or cablecast television programs for a plurality of television channels and a tuner for tuning a television receiver to a selected one of the plurality of channels. A data processor receives and stores in a memory television program schedule information for a plurality of television programs to appear on the plurality of television channels. A user control apparatus, such as a remote controller, is utilized by a viewer to choose user control commands and transmit signals in response to the data processor which receives the signals in response to user control commands. A television receiver is used to display the television programs and television program schedule information. A video displaygenerator receives video control commands from the data processor and program schedule information from the

memory and displays a portion of the program schedule information in overlaying relationship with a television program appearing on a television channel in at least one mode of operation of the television programming guide. The data processor controls the video display generator with video control commands, issued in response to the user control commands, to display program schedule information for any chosen one of the plurality of television programs in overlaying relationship with at least one television program then appearing on any chosen one of the plurality of channels on the television receiver. The system includes a scan feature to permit the user to scan program schedule listings for multiple programs in any of the operational modes of the system with the issuance of a single user control command.

**French Abstract:** Ce systeme electronique de programmation d'emissions utilise un recepteur destine a recevoir des emissions de television, qu'il s'agisse d'emissions radiotelevisees, ou d'emissions transitant par satellite ou par cable, pour plusieurs canaux televisuels, ainsi qu'un syntoniseur permettant d'accorder le recepteur de television a l'un des canaux selectionnes. Une unite de traitement des donnees recoit et stocke en memoire une information concernant une programmation des emissions de television relative a plusieurs emissions de television passant sur les canaux televisuels susmentionnes. Le spectateur utilise un equipement de commande utilisateur, une telecommande par exemple, pour selectionner les instructions de commande et envoyer des signaux de reponse a l'unite de traitement des donnees recevant elle-meme des signaux emis par ledit spectateur. Le recepteur de television est utilise pour l'affichage des emissions et de l'information relative a la programmation des emissions. Un systeme de visualisation, qui recoit des instructions de commande video provenant de l'unite de traitement des donnees ainsi qu'une information concernant la programmation d'emissions, affiche une partie de cette information en la superposant a l'emission de television qui passe sur un canal selon au moins un mode operatoire du guide de programmation des emissions. L'unite de traitement des donnees agit sur le systeme de visualisation par le biais des instructions de commande video produites en reponse aux instructions de commande fournies par l'utilisateur et ce, afin d'afficher l'information relative a la programmation d'emissions pour toute emission choisie en la superposant a l'emission, une au moins, qui passe sur l'un des canaux choisis du recepteur de television. Ce systeme comporte un dispositif de recherche par balayage permettant a l'utilisateur d'explorer les listes de programmation d'emissions de television a la recherche de plusieurs emissions dans l'un quelconque des modes operatoires du systeme et ce, en envoyant une seule instruction de commande utilisateur.

#### **Detailed Description:**

#### **ELECTRONIC TELEVISION PROGRAM**

#### **GUIDE SCHEDULE SYSTEM AND METHOD WITH SCAN FEATURE**

#### **Background of the Invention**

This invention relates to an electronic program schedule system, which provides a user with schedule information for broadcast or cablecast programs viewed by the user on a television receiver. More particularly, it relates to an improved electronic program guide that provides the user with a more powerful and convenient operating environment, while, at the same time, increasing the efficiency of navigation by the user through the guide. Most particularly, it relates to an improved EPG having a scan feature. The EPG scan feature causes television programs and/or items of program schedule information to be displayed serially, each for a fixed time. The feature may be turned off at any point during the scan, whereupon, as described below, the user may either continue to view the then-displayed program or schedule information, or return to the program or schedule information displayed at the time the scan was initiated.

Electronic program guides for television systems are known in the art. For example, one prior system used an electronic character generator to display textual schedule information on the full screen of a television receiver. Other prior systems presented electronically stored program schedule information to a user for viewing while allowing the user to select display formats. Still other systems employed a data processor to input user selection criteria, then stored only the program schedule information meeting these criteria, and subsequently used the stored information to automatically tune a programmable tuner or activate a recording device at the time of broadcast of the selected television programs. Such prior systems are generally discussed in "Stay Tuned for Smart TV," published in the November 1990 issue of Popular Science.

Collectively, the prior electronic program systems may be difficult to implement and cumbersome to use. They also fail to provide viewing capabilities that address in a more realistic manner the viewing habits of the users of these electronic program systems.

Moreover, many of these systems are complex in their design and are expensive to implement.

Ease of use and economy are primary concerns of television program distributors and viewers as they contemplate dramatic increases in the number and nature of program networks and other television-based services. And, as the number of television channels available to a user increases dramatically with the advent of new satellite and cable-based technologies, the utility of these prior systems substantially diminishes.

The prior electronic program guides also lack a method for creating a viewing itinerary electronically while still viewing a program currently appearing on the television receiver. Moreover, these prior program guides leave much guess work for the user as he navigates through a sequence of channels. When skimming through channels to ascertain the program then being displayed on any channel, commonly known as "channel surfing," the user needs to guess which program is currently being aired from the video encountered as the user surfs through the channels. Since much -- in some cases, up to 30% -- of the programming appearing on any given channel at any given time is advertising or other commercial programming, the user is not provided with any clues as to what program is appearing on a selected channel at a given time and must therefore wait until the advertisement or commercial is over before ascertaining the program then appearing on the selected channel. Thus a need exists for a program guide which displays current program schedule information for each channel as the user surfs through the available channels.

Accordingly, there is a need in the art for a simplified electronic program schedule system that may be more easily implemented, and which is appealing and efficient in operation. There is also a need to provide the user with an electronic program schedule system that displays both broadcast programs and electronic schedule information in a manner not previously available with other electronic program schedule systems, particularly those using a remote controller.

The present invention is directed to the incorporation of a "scan" feature into an EPG. Such a scan feature is useful to automatically cycle through a plurality of programs currently being received on a plurality of channels, or a plurality of program schedule information in any of the various operating modes of an EPG as described below.

Certain scan features are known in the audio field, particularly in automobile radios to permit a user to sample the radioprograms being received on a number of stations in a hands-free manner with the single touch of a button. Once a radio's scan feature has been enabled, the radio tunes to each receivable radio station on the tuning band, in order, beginning at the presently tuned station and stopping for a preset

time at each station before moving to the next. When the driver or other listener wishes the radio to remain tuned to a particular one of the scanned stations, the scan function is deactivated and listening returns to normal.

In addition, some remote control devices for television, such as the Uniwand' sold by Universal Electronics, include a "scan" key. When this key is pressed, the remote control device emits a stream of infrared signals at predetermined time intervals to cause the television tuner to sequentially tune to the next channel. However, because the signals are transmitted by the remote control device, the user must keep the device aimed at the infrared receiver throughout the scan process so that the infrared signals continue to be received by the television. This is awkward and cumbersome.

However, existing EPGs do not provide for user-controllable scanning of programs or program schedule information, which are desirable features in an EPG because the user need not manually scan, or "surf," through programs or schedule information by continually depressing a channel or direction arrow key on a remote controller.

Accordingly, it is an object of the present invention to incorporate a scan feature into an EPG.

It is a further object of the present invention to incorporate the scan feature into the various operating modes of the EPG.

A still further object of the present invention is to incorporate a scan feature into of an EPG such that a user can scan through actual television programs or program schedule information.

A still further object of the invention is to obviate the requirement for a user to keep the remote control device aimed at the television to perform a scan operation.

These and other objects of the invention are achieved by an electronic program schedule system which includes a receiver for receiving broadcast, satellite or cablecast television programs for a plurality of television channels and a tuner for tuning a television receiver to a selected one of the plurality of channels. A data processor receives and stores in a memory television program schedule information for a plurality of television programs to appear on the plurality of television channels. A user control apparatus, such as a remote controller, is utilized by a viewer to choose user control commands and transmit signals in response to the data processor which receives the signals in response to user control commands. A television receiver is used to display the television programs and television program schedule and other information. A video display generator receives video control commands from the data processor and program schedule information from the memory and displays a portion of the program schedule information in either full screen mode or in overlaying relationship with a television program appearing on a television channel in at least one mode of operation of the television programming guide. The data processor controls the video display generator with video control commands, issued in response to the user control commands, to display program schedule information for any chosen one of the plurality of television programs in either full screen mode or in overlaying relationship with at least one television program then appearing on any chosen one of the plurality of channels on the television receiver.

In response to a single user control command, the data processor causes the tuner to scan channels and/or program schedule information serially. For example, in one mode of operation of the EPG of the present invention -- referred to as FLIP mode and described more fully below -- the data processor causes the tuner to increment (or decrement) by one the currently tuned channel, display the received program for the channel together with program schedule information identifying the program for a predetermined amount of time, and then increment (or decrement) by one the channel, display that channel and

associated program schedule information for the predetermined amount of time, and so on, until a second user control command causes the tuner to stop scanning and remain on the currently tuned channel, or until the data processor otherwise causes the tuner to stop the scan. Similarly, in another mode of operation of the EPG of the present invention -- referred to as BROWSE mode and described more fully below -- the scan feature may be used to scan program schedule information (on either a channel or time basis) while the tuner remains tuned to the same channel.

In addition, the scan feature of the present invention may also be used in modes of an EPG that display full pages of program schedule information to permit a user to scan through the program schedule information with a single user control command.

### Brief Description of the Drawings

Fig. 1 is a block diagram showing various components of the preferred embodiment of the invention herein.

Fig. 2 is a block diagram showing the combination of program and schedule information by the video overlay device utilized in the present invention.

Fig. 3 depicts a remote controller that can be used in connection with the electronic program guide system of the present application.

Fig. 4 depicts an alternative embodiment of the remote controller shown in Fig.

3.

Fig. 5A shows an overlay appearing on a television screen in one mode of operation of the present invention.

Figs. 5B-C illustrate the operation of the scan feature in the "FLIP" mode of the present invention.

Fig. 6 illustrates a screen used in the present invention that permits a user to set the term of a scan operation.

Fig. 7 shows a graphic overlay appearing on a television screen in a "BROWSE" mode of operation of the present invention.

Fig. 8 shows a graphic overlay appearing on a television screen in a BROWSE mode of operation of the present invention having different information from that shown in Fig. 7.

Fig. 8A shows a graphic overlay appearing on a television screen in a BROWSE mode of operation in the present invention displaying schedule information for a time and channel other than that shown in Fig. 7.

Fig. 9A shows a graphic overlay appearing on a television screen in a BROWSE mode of operation in the present invention to permit a user to set a REMINDER message for a future program.

Fig. 9B shows yet another graphic overlay appearing in a REMINDER mode of operation of one embodiment of the present invention.

Fig. 10 shows a screen used in one embodiment of the present invention to permit a user to select a

channel-wise or time-wise scan in the BROWSE mode of operation of one embodiment of the present invention.

Fig. 1 1A-C show three successive screen displays of a channel-wise scan in the BROWSE mode of operation of one embodiment of the present invention.

Figs. 12A - 12C show three successive screen displays of a time-wise scan in the BROWSE mode of operation of one embodiment of the present invention.

Figs. 13A - 13C show three successive screen displays of an alternate embodiment of a time-wise scan in the BROWSE mode of operation of one embodiment of the present invention.

Fig. 14 shows schedule information displayed in a Listings By Category mode of operation of one embodiment of the present invention.

Fig. 15 shows schedule information displayed in a Listings By Channel mode of operation of one embodiment of the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

### System Configuration

Fig. 1 is a block diagram showing various components of the electronic program schedule system generally designated as 10. Physically, these system components can be located in a user's set-top cable converter box or other signal reception or processing device, such as a satellite receiver. Alternatively, the components can be mounted in a separate housing, or included as part of a television receiver, VCR, personal computer, or multimedia player; or reside as a distributed application in a broadband network architecture.

An input signal 11 is connected to a receiver 12, which receives a transmitted data stream from a data provider. The data stream may contain, for example, information about programs or services available in a particular market, geographical or otherwise. The input signal 11 can originate, for example, as part of a standard broadcast, cablecast or satellite transmission, or other form of data transmission. The data provider is a program information provider, the satellite uplink manager, a local cable operator, or a combination of these sources, and the data stream contains program schedule information for all television programs and other services available in the operator's geographical market.

The data stream may be modulated and then transmitted on the cable line in any number of ways, including as part of a dedicated channel transmission operating at a frequency of, for example, 75 MHz. Those of skill in the art will understand that numerous other transmission schemes can be used to transmit the data stream, such as embedding it in the vertical blanking interval of a program broadcast signal. As will be discussed in greater detail below, according to the present invention, the transmitted data stream may additionally contain application software for implementing or updating the electronic program guide at the user site.

The transmitted program schedule data or application software is received by the receiver 12 on signal input line 11. The received signal is passed from the receiver to a data demodulator 13, such as a QPSK demodulator or a GI Info-Cipher 1000R, which demodulates the transmission and passes it to a buffer 15.

A microcontroller 16, such as a M68000EC, receives data passed to the buffer 15. Bootstrap operating

software, which may be used for capturing electronic program guide application software updates, is stored in a read only memory (ROM) 17. The microcontroller 16 uses the received program schedule information to build a database by storing the data in appropriately organized records in dynamic random access memory (DRAM) 18. The stored schedule information can be updated on a periodic basis, such as hourly, daily or weekly, or at any time when changes in scheduling or other factors warrant an update. The system also includes a system clock 19.

Alternatively, the program schedule information could be supplied in a ROM, disk or other non-volatile memory, or it could be downloaded to a storage disk or other data storage device. The invention herein is not directed to the particular method of transmission or reception of the schedule information.

If the microcontroller 16 recognizes the received data as application software which controls the program schedule system, as opposed to program schedule information, it stores it in non-volatile memory, such as an electrically erasable programmable ROM (EEPROM) 20 or battery-backed static RAM (SRAM). This configuration allows revised or replacement versions of the application software to be downloaded directly from the software developer to the user site through the cable or other transmission system.

In the case where an EEPROM is utilized, revised or replacement versions of the application software downloaded from the developer are first stored in DRAM 18 by the microcontroller 16, under direction of the downloading operating software stored in the ROM 17. The stored application software can then be checked for accuracy by, for example, a checksum analysis or other verification routine.

After the accuracy of the application software has been verified, the microcontroller 16 initiates a routine to re-program the EEPROM 20, where the application software is permanently stored. The microcontroller 16 will issue proper control commands to a reprogram circuit 21, which is adapted to supply the proper program voltage and logic control signals 22 required to erase and write to the EEPROM. It supplies this program voltage,  $V_{prog}$ , as well as any other required control signals, such as read or write enable, to the EEPROM 20 upon command from the microcontroller 16. After the EEPROM 20 has been electrically erased, the microcontroller 16 initiates transfer of the new application software from the DRAM 18 to the EEPROM 20 for storing.

When a battery-backed SRAM is utilized as non-volatile memory, the microcontroller stores the revised or replacement version of the application software downloaded from the developer directly in the SRAM, again under direction of the downloading operating software stored in the ROM. The stored application software can then be checked for accuracy by, for example, a checksum analysis or other verification routine.

When power is first applied to the system 10, the bootstrap operating software verifies that the program guide application software is resident in memory. If it is not resident, the bootstrap operating software waits for a download of the software. Once the application software is resident, the microcontroller 16 executes the application program software from a dedicated portion of the DRAM 18. Alternatively, the application software can be executed directly from the non-volatile memory 20. Under control of the program guide application software, the microcontroller 16 first verifies that the program schedule information is resident in DRAM 18. If it is not resident, the microcontroller waits for a download of the program schedule information, as discussed above. Alternatively, if the application program is resident in memory, but the database records containing the program schedule information data are not yet available, the application software can be configured to carry out other tasks, such as allowing the user to carry out functions not requiring the program schedule information data, as well as displaying an appropriate message indicating the database data is not yet available.



program along with its schedule information and later use the identifier -- e.g., by transmitting it -- to indicate to a recording or storage device, such as a video recorder, that the user wishes to record the program. The program guide could also use the identifier to automatically control operation of the video recorder. The electronic program guide could also be configured to use other stored schedule information for this purpose.

The form and content of a particular computer program to implement the invention disclosed herein will be readily apparent to those skilled in the art of video system programming and graphic display. It will also be appreciated by those skilled in the art that there can be departure from the specific embodiment of the invention described herein without departing from the true scope of the claims appended hereto.

**Claim:**

We claim:

1. An electronic programming guide for use with a television receiver having a plurality of television channels for displaying television programs and program schedule information for said television programs comprising:

memory means for storing television program schedule information for a set of television programs scheduled to appear on said plurality of television channels; user control means for choosing user control commands, including television channel-tuning and guide scan control commands comprising a guide start scan command, and transmitting signals in response thereto; data processing means for receiving said signals in response to said user control commands and generating video control commands; a video display generator adapted to receive video control commands from said data processing means and program schedule information from said memory means for displaying a portion of said schedule information comprising listing information for a display signal appearing on a currently tuned channel in at least one mode of operation of said programming guide; said data processing means being responsive to said start scan command for controlling said video display generator to sequentially display in a predetermined sequence, for each channel in a set of television channels, each said display signal currently appearing on each of said channels in said set with a portion of program schedule information corresponding to said currently appearing display signal, each one of said currently appearing display signals and said corresponding portion of said schedule information being displayed simultaneously and for a predetermined amount of time.

2. The programming guide of claim 1 wherein said guide scan control commands comprise a guide stop scan command and said data processing means causes said video display generator to continue to sequentially display each said currently appearing display signal for each channel in said set for said predetermined time period until said stop scan command is received.

3. The programming guide of claim 1 wherein said user control means comprises channel up/down buttons for generating said channel-tuning commands.

4. The programming guide of claim 1 wherein said set of channels comprises a sequence of consecutively numbered channels.

5. The programming guide of claim 1 wherein said set of channels is defined by the content of a display signal currently appearing on each of said channels in said set.

6. The programming guide of claim 1 wherein said predetermined amount of time is user-definable.

7. The programming guide of claim 2 wherein said data processing means causes said video display generator to remain tuned to the channel currently tuned when said stop scan command is received.

8. mand \*

The programming guide of claim 3 wherein said scan control com is generated by depressing said channel up or channel down button for a predetermined amount of time.

9. The programming guide of claim 1 wherein said user control means further comprises means for generating a go back command and said data processing means causes said video display generator to display the display signal appearing on the channel tuned when said scan command was received in response to said go back command.

10. The programming guide of claim 4 wherein said scan data processing means selects the next higher channel in said sequence after the expiration of said predetermined amount of time.

11. The programming guide of claim 4 wherein said scan data processing means selects the next lower channel in said sequence after the expiration of said predetermined amount of time.

12. The programming guide of claim 1 wherein said data processing means causes said video display generator to continue to display the display signal appearing on the channel tuned when said scan command was received by said data processing means after each said display signal appearing on each said channel in said set is displayed once.

13. The programming guide of claim 8 wherein said set of channels comprises a plurality of consecutively numbered channels.

14. The programming guide of claim 1 wherein said set of channels comprises a user-defined favorite channel list.

15. An electronic programming guide for use with a television receiver having a plurality of television channels for displaying television programs and program schedule information for said television programs comprising:

memory means for storing television program schedule information for a set of television programs scheduled to appear on said plurality of television channels; user control means for choosing user control commands, including television channel-tuning and guide scan control commands comprising a guide start scan command, and transmitting signals in response thereto; data processing means for receiving said signals in response to said user control commands; a video display generator adapted to receive video control commands from said data processing means and program schedule information from said memory means for displaying portions of said schedule information comprising listing information for display signals scheduled to appear on channels different from a currently tuned channel in at least one mode of operation of said programming guide; said data processing means being responsive to said start scan command for controlling said video display generator to sequentially display in a predetermined sequence, for each channel in a set of television channels, listing information for a television program scheduled to appear on said channel, said listing information being displayed simultaneously with a display signal appearing on said currently tuned channel and for a predetermined amount of time; wherein said listing information for each channel in said sequence is removed from said display before listing information for the next channel in said sequence is displayed.

16. The programming guide of claim 15 wherein said predetermined amount of time is user-definable.
17. The programming guide of claim 15 wherein said user control means comprises a scan button for generating said channel start scan command.
18. The programming guide of claim 15 wherein said user control means comprises channel up/down buttons for generating said channel control commands.
19. The programming guide of claim 15 wherein said set of channels comprises a plurality of consecutively numbered channels.
20. The programming guide of claim 15 wherein said set of channels comprises a user-defined favorite channel list.
21. The programming guide of claim 15 wherein each said portion of program schedule information selected by said data processing means comprises listing information for programs scheduled to appear during the same time period.
22. The programming guide of claim 21 wherein said time period comprises the current time.
23. The programming guide of claim 21 wherein said time period comprises future time.
24. The programming guide of claim 15 wherein the first channel in said predetermined channel tuning sequence comprises said currently tuned channel.
25. The programming guide of claim 15 wherein the first channel in said predetermined channel tuning sequence comprises a channel adjacent said currently tuned channel in said sequence.
26. The programming guide of claim 15 wherein said user control means further comprises means for generating a stop scan command.
27. The programming guide of claim 22 wherein said user control means further comprises means for generating a stop scan command.
28. The programming guide of claim 27 wherein said data processing means causes said video display generator to display the display signal currently appearing on the channel for which program schedule information is displayed when said stop scan command is received by said data processing means.
29. The programming guide of claim 23 wherein said user control means further comprises means for generating a stop scan command.
30. The programming guide of claim 29 wherein said data processing means causes said video display generator to display a screen to allow the user to set a reminder message or VCR timer for the program scheduled to appear at said future time on the channel for which program schedule information is displayed when said stop scan command is received by said data processing means.
31. An electronic programming guide for use with a television receiver having a plurality of television channels for displaying television programs and program schedule information for said television programs comprising:

memory means for storing television program schedule information for a set of television programs scheduled to appear on said plurality of television channels; user control means for choosing user control commands, including television channel-tuning and guide scan control commands comprising a guide start scan command, and transmitting signals in response thereto; data processing means for receiving said signals in response to said user control commands; a video display generator adapted to receive video control commands from said data processing means and program schedule information from said memory means for displaying portions of said schedule information comprising listing information for display signals scheduled to appear on one of said television channels during a plurality of time periods in at least one mode of operation of said programming guide; said data processing means being responsive to said start scan command for controlling said video display generator to sequentially display in a predetermined sequence, for each of said plurality of time periods, listing information for television programs scheduled to appear on said one channel during each of said plurality of time periods, said listing information being displayed simultaneously with a display signal appearing on said currently tuned channel and for a predetermined amount of time, wherein said listing information for each time period in said sequence is removed from said display before listing information for the next time period in said sequence is displayed.

32. The programming guide of claim 31 wherein said user control means comprises a scan button for generating said scan control command.

33. The programming guide of claim 31 wherein said one channel is said currently tuned channel.

34. The programming guide of claim 31 wherein said one channel differs from said currently tuned channel.

35. The programming guide of claim 31 wherein said user control means comprises a right arrow button for generating said scan control command.

36. The programming guide of claim 35 wherein said scan control command is generated by depressing said right arrow button for a predetermined amount of time.

37. The programming guide of claim 31 wherein said plurality of time periods comprise successive time periods.

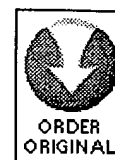
38. The programming guide of claim 31 wherein said plurality of time periods comprise a plurality of user-defined time periods.

39. The programming guide of claim 31 wherein said plurality of time periods comprises future time periods.

40. The programming guide of claim 39 wherein the latest of said future time periods is determined by the capacity of said memory means.

41. The system of claim 39 wherein said user control means further comprises means for generating a stop scan command while one of said successive portion of program schedule information for said one channel and one of said future time periods is displayed and said data processing means causes said video display generator to display a screen to allow the user to set a reminder message or VCR timer for the program scheduled to appear at said one future time period on said one channel.

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**IMPROVED ELECTRONIC TELEVISION PROGRAM GUIDE SCHEDULE SYSTEM AND  
METHOD WITH POP-UP HINTS  
SYSTEME ET PROCEDE DE PROGRAMMATION AMELIOREE POUR GUIDE  
D'EMISSIONS DE TELEVISION ELECTRONIQUE AVEC MESSAGES D'AIDE INCRUSTES**

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**English Abstract:** An electronic program schedule system which includes a receiver for receiving broadcast, satellite or cablecast television programs for a plurality of television channels and a tuner for tuning a television receiver to a selected one of the plurality of channels. A data processor receives and stores in a memory television program schedule information for a plurality of television programs to appear on the plurality of television channels. A user control apparatus, such as a remote controller, is utilized by a viewer to choose user control commands and transmit signals in response to the data processor which receives the signals in response to user control commands. A television receiver is used to display the television programs and television program schedule information. A video displaygenerator

receives video control commands from the data processor and program schedule information from the memory and displays a pop-up hint in overlaying relationship with the program schedule information in at least one mode of operation of the television programming guide. The data processor controls the videodisplay generator with video control commands, issued in response to the user control commands, or in response to a predetermined period of user inactivity to display pop-up hints for the user's current position in the guide in overlaying relationship with the program schedule information.

**French Abstract:** Cette invention se rapporte a un systeme de programmation d'emissions de television electronique, qui comprend un recepteur destine a recevoir des programmes de television telediffuses, diffuses par satellite ou par cable pour plusieurs canaux de television, ainsi qu'un syntoniseur servant a syntoniser un recepteur de television sur un canal choisi parmi la pluralite desdits canaux. Un processeur de donnees recoit et stocke en memoire les informations de programmation pour plusieurs programmes de television, afin de les faire apparaitre sur plusieurs canaux de television. Un appareil de commande d'utilisateur, tel qu'une telecommande, est utilise par le telespectateur pour lui permettre de choisir les instructions de commande d'utilisateur et de transmettre des signaux en reponse au processeur de donnees qui recoit les signaux en reponse aux instructions de commande d'utilisateur. Un recepteur de television est utilise pour afficher les programmes de television et les informations de programmation des emissions de television. Un generateur d'affichage video recoit les instructions de commande video provenant du processeur de donnees et les informations de programmation d'emissions provenant de la memoire et affiche un message d'aide incruste en surimpression par rapport aux informations de programmation d'emissions dans au moins un mode de fonctionnement du guide de programmation de television. Le processeur de donnees commande le generateur d'affichage video au moyen des instructions de commande video, emises en reponse aux instructions de commande de l'utilisateur, ou en reponse a une periode predeterminee d'inactivite de l'utilisateur, afin d'afficher des messages d'aide incrustes selon la position courante de l'utilisateur dans le guide en surimpression par rapport aux informations de programmation des emissions.

#### **Detailed Description:**

#### **IMPROVED ELECTRONIC TELEVISION PROGRAM**

**GUIDE SCHEDULE SYSTEM AND METHOD WITH POP~UP HINTS** This application is a continuation-in-part of application serial no. 08/247,101, filed May 20, 1994, which is a continuation-in-part of application serial no. 08/119,367, filed Sept. 9, 1993.

#### **Background of the Invention**

This invention relates to an electronic program schedule system, which provides a user with schedule information for broadcast or cablecast programs viewed by the user on a television receiver. More particularly, it relates to an improved electronic program guide that provides the user with a more powerful and convenient operating environment, while, at the same time, increasing the efficiency of navigation by the user through the guide.

Electronic program guides for television systems are known in the art. For example, one prior system used an electronic character generator to display textual schedule information on the full screen of a television receiver. Other prior systems presented electronically stored program schedule information to a user for viewing while allowing the user to select display formats. Still other systems employed a data processor to input user-selection criteria, then stored only the program schedule information meeting these criteria, and subsequently used the stored information to automatically tune a programmable tuner or activate a recording device at the time of broadcast of the selected television programs. Such prior systems are generally discussed in "Stay Tuned for Smart TV," published in the November 1990 issue of

## Popular Science.

Collectively, the prior electronic program systems may be difficult to implement and cumbersome to use. They also fail to provide viewing capabilities that address in a more realistic manner the viewing habits of the users of these electronic program systems. Moreover, many of these systems are complex in their design and are expensive to implement. Ease of use and economy are primary concerns of television program distributors and viewers as they contemplate dramatic increases in the number and nature of program networks and other television-based services.

And, as the number of television channels available to a user increases dramatically with the advent of new satellite and cable based technologies, the utility of these prior systems substantially diminishes.

These prior-art systems also fail to provide the user with sufficient information, for example pricing and the like, about pay-per-view events, premium services or other packaged programming to which the user does not subscribe, nor do they provide the user with the capability to automatically purchase such programming on demand or impulse. Moreover, these prior-art systems are deficient in that they fail to provide an efficient and automatic method of updating or replacing the application software programs that implement the electronic guide at the user sites, relying instead on manual or other cumbersome forms of revision or replacement or hardware-based systems that can not be updated without physical replacement of integrated circuits and/or other parts.

Nor do these prior electronic guide systems have the capability of linking the user to other applications or information systems which are not part of the electronic program guide application or data.

Nor do these prior electronic guide systems provide video promotion of television programs and services that are functionally linked and visually displayed in an integrated fashion. Program promotion is an important element of the effective marketing of television programming. The promotion of pay-per-view pay (i.e., "a la carte") programs and other unregulated program services is particularly important to cable television operators in the wake of re-regulation by the federal government. The current method of promoting such programming using video is through dedicated "barker" channels that use full screen continuous trailers (i.e., previews) which may or may not be accompanied by prices and ordering information. Recently, such promotional videos have been shown in split screens where part of the screen shows general schedule information for a time period roughly corresponding to the time period during which the general program being promoted is shown. Accordingly, there exists a need for an electronic program guide which can provide improved display and linking of video promotions with program schedule information and order processing functions.

The prior electronic program guides also fail to provide the user with a simple and efficient method of controlling access to individual channels and individual programs. The amount of adult situations involving sex and violence has steadily increased during the last 40 years. The issue of how this affects children or other viewers has gained national attention. Providing a parent with the ability to lock-out a channel is a well known and widespread feature of certain television receivers and cable converter boxes. Despite this availability, the feature is seldom used by parents. The main impediments to its effective use are the cumbersome ways in which it is generally implemented, as well as the requirement that entire channels be blocked in order to block access to any objectional programming. A channel-oriented parental lock is unfair to other programmers on the blocked channel -- who, for example, offer adult-oriented programming in the evening and youth-oriented programming the following morning- and inconvenient for viewers who want access to such programs.

Thus, there is a particular need for a system which provides password control to individual programs and



channels using a flexible and uncomplicated on-screen user interface.

The prior electronic program guides are also deficient in that they do not provide the user with the ability to view on demand current billing status and, thus, a need exists for a BySystem which can provide the user with current billing information on the user's demand.

An additional problem with prior program guides is that when displaying schedule information in grid format, i.e., columns representing time slots and rows representing channels, program titles generally are width-wise truncated to fit into the cells of the grid. The width of a grid cell varies with the duration of the program. Since a 30 minute program is allotted only a small amount of space for the program title and description, titles and/or descriptions for half and even full hour programs often must be truncated in order to fit into the allotted space. Some systems simply cut off the description of a program without abbreviating it in any way, such that the user is unable to determine the subject matter of the program. For example, a recent television program display included the following text in a grid cell: "Baseball: Yankees v. 11 Although some systems partially alleviate this problem by providing two lines of text in each grid cell, this solution is not ideal because program descriptions may still be truncated.

A similar problem arises as the time slots change, either automatically or in response to a user control command.

Typically, 90 minutes of schedule information is displayed at one time and the 90 minute window is shiftable in 30-minute increments. In the case where a 30 minute shift causes a 30 minute size grid cell to display, e.g., a two-hour movie, it is likely that the full title of the movie will not fit into the cell. Truncation of the title is thus required in this situation as well. In this case, while two lines of text may be desirable to fit the title in the 30 minute cell, the 60 and 90 minute cells may require only one line of text to display the title.

The prior electronic program guides also lack a method for creating a viewing itinerary electronically while still viewing a program currently appearing on the television receiver.

Moreover, these prior program guides leave much guess work for the user as he navigates through a sequence of channels. When skimming through channels to ascertain the program then being displayed on any channel, commonly known as "channel surfing," the user needs to guess which program is currently being aired from the video encountered as the user surfs through the channels.

Since much -- in some cases, up to 30% -- of the programming appearing on any given channel at any given time is advertising or other commercial programming, the user is not provided with any clues as to what program is appearing on a selected channel at a given time and must therefore wait until the advertisement or commercial is over before ascertaining the program then appearing on the selected channel. Thus a need exists for a program guide which displays current program schedule information for each channel as the user surfs through the available channels.

Prior electronic program guides are also deficient in that they do not provide the user with appropriate and unobtrusive guidance as to what actions may be taken at different points in the guide. When using an electronic program guide, the user may reach a screen or maneuver the cursor to a state where the user is uncertain what actions may be taken. Prior guides either do not have any facility to provide the user with guidance, or they require that the user explicitly ask for help by, e.g., pressing a help button. If the guide requires the user to explicitly ask for help, and the user is not aware that help is available, the user may be confused or unsure how to obtain assistance in operating the guide. If the system does not provide on-screen help, the user must search through cumbersome and complicated manuals that are often

confusing and not helpful or are lost or not readily available.

In addition, electronic program guides that do provide context-sensitive on-screen assistance often require that the user leave the task he or she is performing (operating the guide), overlaying the image with the help information. This feature may be cumbersome in that the user must exit the help screen before executing a command suggested by the help information. These guides provide no facility whereby the user can execute a command while the help information is displayed on the screen. These prior guides also do not automatically provide help in response to inactivity or improper key-strokes by the user, requiring that the user know that on-screen help is available. This can frustrate users who are unfamiliar with the operation of the guide and unaware of the existence of on-screen help.

Known in the art of computer games, and in particular games involving characters moved through scenes under control of the player, are prompts that appear on screen if the player stalls for a certain amount of time. In this situation, the game assumes that the player is in need of assistance with regard to possible actions to take at that point in the program. The system then prompts the player what action or actions to take to provide assistance in progressing through the scene.

However, current application software programs, like electronic program guides, lack adequate help features in several respects. In general, such programs do not provide for user hints based on a period of inactivity in defined contexts within the program. As such programs are constantly increasing in complexity, there is a need to provide the user with hints where, based on a predetermined period of user inactivity, the program determines that the user has reached a point in the program where he or she is unsure of what to do.

Accordingly, there is a need in the art for a simplified electronic program schedule system that may be more easily implemented, and which is appealing and efficient in operation.

There is also a need to provide the user with an electronic program schedule system that displays both broadcast programs and electronic schedule information in a manner not previously available with other electronic program schedule systems, particularly those using a remote controller.

For example, there is a particular need for a flexible program schedule system that allows a user to view selected broadcast programs on a portion of the screen of the television receiver while simultaneously viewing program schedule information for other channels and/or services on another portion of the screen. There is also a need for such a program schedule system that permits the user to select from a plurality of selectable display formats for viewing the program schedule information. It is also preferred to have a system that indicates to the user those keys on the remote controller that are active in any particular mode of operation. There also exists a need for such a system that will give a user the capability to set a programmable reminder for viewing a program scheduled to air at a future time.

There is also a need for an electronic guide system providing the user with comprehensive information about pay-per view events, premium services or other packaged programming to which the user does not ordinarily subscribe, and which provides the user with the capability to automatically purchase such programming on demand or impulse. There is also a need for an electronic guide system providing a reliable and efficient method of updating or replacing the application software that implements the electronic guide at the user sites.

There also exists a need for an electronic program guide that operates as a shell or window to provide the user with the capability to access other applications or information systems that are not part of the electronic program guide application or data.

1. An electronic television program guide system comprising:

means for receiving user control commands for controlling the operation of said guide; timing means for determining the elapsed time since the most recent received user control command; storage means for storing i) program schedule information for a plurality of television programs, and ii) a plurality of predetermined hints for operating said guide wherein each said hint is associated with at least one of said user control commands; data processing means coupled to said receiving means and said storage means for generating i) a first video display control command in response to a first user control command to display a program guide information screen representative of a program guide operating point, and ii) a second video display control command to display a predetermined hint in partial overlaying relationship with said information screen, said second video display command being generated when said elapsed time equals a first predetermined amount of time or in response to a second user control command that is not valid for said program guide operating point; and video display generator means coupled to said data processing means and said storage means for receiving said video display control commands from said data processing means, and generating a display signal comprising said predetermined hint in partial overlaying relationship with said information screen.

2. The system of claim 1 wherein said information screen comprises a portion of said program schedule information for a plurality of television programs.

3. The system of claim 1 wherein said information screen comprises a screen for setting parameters to control the operation of the guide.

4. The system of claim 1 wherein said data processing means comprises means for sequentially generating a plurality of second video display control commands to display a plurality of said hints in sequence in partial overlaying relationship with said information screen.

5. The system of claim 4 wherein said sequence is defined using a look-up table associated with said operating point of said program guide.

6. The system of claim 5 wherein said plurality of hints are arranged in said table in decreasing order of likelihood that the command or commands associated with said hint will be executed from said program operating point.

7. The system of claim 4 wherein said sequence is defined based upon a prior user control command.

8. The system of claim 5 wherein said sequence is further defined based upon a prior user control command.

9. The system of claim 4 wherein said timing means further determines the elapsed time since the most recent of said sequentially generated second video display control commands, and said data processing means generates the next sequential second video display control command is generated after said elapsed time since the most recent of said second sequentially generated video display control commands equals a second predetermined amount of time.

10. The system of claim 4 wherein each of said plurality of second video display control commands is generated in response to a received user control command.

11. The system of claim 1 additionally comprising a remote control device for generating said user

control commands.

12. The system of claim 1 wherein said information screen comprises a cursor and said hint is displayed in partial overlaying relationship with said information screen so as not to obscure the position of said cursor.

13. The system of claim 1 wherein said predetermined hint is selected by said data processing means based upon said program guide operating point.

14. The system of claim 13 wherein said predetermined hint is selected by said data processing means further based upon said most recent received user control command.

15. The system of claim 13 wherein said data processing means determines a set of valid user control commands in accordance with said program guide operating point and said predetermined hint is selected further based upon said set of valid user control commands.

16. The system of claim 13 wherein said data processing means determines the current time and said predetermined hint is selected further based upon said current time.

17. The system of claim 13 wherein said predetermined hint is selected by said data processing means further based upon information derived from said program schedule information.

18. An electronic television program guide system comprising:

means for receiving user control commands for controlling the operation of said guide; storage means for storing i) program schedule information for a plurality of television programs, and ii) a plurality of predetermined hints for operating said guide wherein each said hint is associated with at least one of said user control commands; dataprocessing means coupled to said receiving means and said storage means for generating i) a first video display control command in response to a first user control command to display a program guide information screen representative of a program guide operating point, and ii) a second video display control command to display one of said predetermined hints in partial overlaying relationship with said information screen, wherein said second video display command being generated in response to a second user control command that is not valid for said program guide operating point; and video display generator means coupled to said dataprocessing means and said storage means for receiving said video display control commands from said data processing means, and generating a display signal comprising said predetermined hint in partial overlaying relationship with said information screen.

19. The system of claim 18 wherein said data processing means comprises means for sequentially generating a plurality of second video display control commands to display a plurality of said hints in sequence in partial overlaying relationship with said information screen.

20. The system of claim 19 wherein said plurality of hints are arranged in said table in decreasing order of likelihood that the command or commands associated with said hint will be executed from said program operating point.

21. The system of claim 18 wherein said predetermined hint is selected by said data processing means based upon said program guide operating point.

22. An electronic television program guide system comprising:

means for receiving user control commands for controlling the operation of said guide; timing means for determining the elapsed time since the most recent received user control command; storage means for storing i) program schedule information for a plurality of television programs, and ii) a plurality of predetermined hints for operating said guide wherein each said hint is associated with at least one of said user control commands; data processing means coupled to said receiving means and said storage means for generating i) a first video display control command in response to a first user control command to display a program guide information screen representative of a program guide operating point, ii) a second video display control command to display a first predetermined hint in partial overlaying relationship with said information screen in response to a second user control command, and iii) a third video display control command to display a second predetermined hint in partial overlaying relationship with said information screen, wherein said third video display control command is generated when said elapsed time equals a first predetermined amount of time, or in response to a third user control command that is not valid for said program guide operating point; and video display generator means coupled to said data processing means and said storage means for receiving said video display control commands from said data processing means and generating a display signal comprising at least one of said predetermined hints in partial overlaying relationship with said information screen.

23. The system of claim 22 wherein said information screen comprises a portion of said program schedule information for a plurality of television programs.

24. The system of claim 22 wherein said data processing means comprises means for sequentially generating a plurality of second video display control commands to display a plurality of said hints in sequence in partial overlaying relationship with said information screen.

25. The system of claim 24 wherein said sequence is defined using a look-up table associated with said operating point of said program guide.

26. The system of claim 25 wherein said plurality of hints are arranged in said table in decreasing order of likelihood that the command or commands associated with said hint will be executed from said program operating point.

27. The system of claim 22 additionally comprising a remote control device for generating said user control commands.

28. The system of claim 22 wherein said information screen comprises a cursor and said hint is displayed in partial overlaying relationship with said information screen so as not to obscure the position of said cursor.

29. The system of claim 22 wherein said predetermined hint is selected by said data processing means based upon said program guide operating point.

30. The system of claim 29 wherein said data processing means determines the current time and said predetermined hint is selected further based upon said current time.

31. The system of claim 29 wherein said predetermined hint is selected by said data processing means further based upon information derived from said program schedule information.

32. An electronic television program guide system comprising:

means for receiving user control commands for controlling the operation of said guide; timing means for

determining the elapsed time since the most recent received user control command; storage means for storing i) program schedule information for a plurality of television programs, and ii) a plurality of predetermined hints for operating said guide wherein each said hint is associated with at least one of said user control commands; data processing means coupled to said receiving means and said storage means for generating i) a video display control command in response to a first user control command to display a program guide information screen representative of a program guide operating point, and ii) a hint retrieval command to cause a hint to be retrieved from, said storage means, wherein said hint retrieval command is generated when said elapsed time equals a first predetermined amount of time, or in response to a second user control command that is not valid for said program guide operating point; means coupled to said data processing means and said storage means for receiving said video display control command from said data processing means, and generating a display signal comprising said information screen; and means for presenting said retrieved hint in a form recognizable by said user while said information screen is being displayed.

33. A process for providing an electronic television program guide comprising:

receiving user control commands for controlling the operation of said guide; determining the elapsed time since the most recent received user control command; storing i) program schedule information for a plurality of television programs, and ii) a plurality of predetermined hints for operating said guide wherein each said hint is associated with at least one of said user control commands; and displaying i) a program guide information screen representative of a program guide operating point in response to a first user control command, and ii) a predetermined hint in partial overlaying relationship with said information screen, said hint being displayed when said elapsed time equals a first predetermined amount of time or in response to a second user control command that is not valid for said program guide operating point.

34. The process of claim 33 additionally comprising sequentially displaying a plurality of said hints in partial overlaying relationship with said information screen.

35. The process of claim 34 wherein said sequence is defined using a look-up table associated with said operating point of said program guide.

36. The process of claim 35 wherein said hints are arranged in said table in decreasing order of likelihood that the command or commands associated with said hint will be executed from that program operating point.

37. The process of claim 34 wherein said sequence is defined based upon a prior user control command.

38. The process of claim 35 wherein said sequence is further defined based upon a prior user control command.

39. The process of claim 34 wherein each of said plurality of hints is displayed for a second predetermined amount of time.

40. The process of claim 34 wherein each of said plurality of hints is displayed in response to a second user control command.

41. The process of claim 33 wherein said user control commands are generated using a remote control device.

42. The process of claim 33 additionally comprising displaying a cursor on said information screen and

displaying said hints in overlaying relationship with said information screen in such a position as not to obscure the position of said cursor.

43. The process of claim 33 wherein said predetermined hint is selected based upon said program guide operating point.

44. The process of claim 43 wherein said predetermined hint is selected further based upon said most recent received user control command.

45. The process of claim 43 additionally comprising determining a set of valid user control commands in accordance with said program guide operating point and selecting said predetermined hint further based upon said set of valid user control commands.

46. The process of claim 43 further comprising determining the current time and selecting said predetermined hint further based upon said current time.

47. The process of claim 43 further comprising selecting said predetermined hint further based upon information derived from said program schedule information.

48. A process for providing an electronic television program guide comprising:

receiving user control commands for controlling the operation of said guide; storing i) program schedule information for a plurality of television programs, and ii) a plurality of predetermined hints for operating said guide wherein each said hint is associated with at least one of said user control commands; and displaying i) a program guide information screen representative of a program guide operating point in response to a first user control command, and ii) a predetermined hint in partial overlaying relationship with said information screen, wherein said predetermined hint is displayed in response to a second user control command that is not valid for said programguide operating point.

49. The process of claim 48 additionally comprising sequentially displaying a plurality of said hints in partial overlaying relationship with said information screen.

50. The process of claim 49 wherein said plurality of hints are arranged in said table in decreasing order of likelihood that the command or commands associated with said hint will be executed from said program operating point.

51. The process of claim 48 wherein said predetermined hint is selected by said data processing means based upon said program guide operating point.

52. A process for providing an electronic television program guide comprising:

receiving user control commands for controlling the operation of said guide; determining the elapsed time since the most recent received user control command; storing i) program schedule information for a plurality of television programs, and ii) a plurality of predetermined hints for operating said guide wherein each said hint is associated with at least one of said user control commands; and displaying i) a program guide information screen representative of a program guide operating point in response to a first user control command, and ii) a predetermined hint in partial overlaying relationship with said information screen in response to a second user control command, and iii) a second predetermined hint in partial overlaying relationship with said information screen, wherein said second predetermined hint is displayed when said elapsed time equals a predetermined amount of time or in response to a third user control

command that is not valid for said program guide operating point.

53. The process of claim 52 further comprising sequentially displaying a plurality of said hints in partial overlaying relationship with said information screen.

54. The process of claim 53 wherein said sequence is defined using a look-up table associated with said program guide operating point.

55. The process of claim 54 wherein said plurality of hints are arranged in said table in decreasing order of likelihood that the command or commands associated with said hint will be executed from said program operating point.

56. The process of claim 52 additionally comprising generating said user control commands by means of a remote control device.

57. The process of claim 52 further comprising displaying a cursor and displaying said hint in partial overlaying relationship with said information screen so as not to obscure the position of said cursor.

58. The process of claim 52 wherein said predetermined hint is selected based upon said program guide operating point.

59. The process of claim 58 further comprising determining the current time and selecting said predetermined hint further based upon said current time.

60. The process of claim 58 wherein said predetermined hint is selected further based upon information derived from said program schedule information.

61. A process for providing an electronic television program guide comprising:

receiving user control commands for controlling the operation of said guide; determining the elapsed time since the most recent received user control command; storing i) program schedule information for a plurality of television programs, and ii) a plurality of predetermined hints for operating said guide wherein each said hint is associated with at least one of said user control commands; displaying a program guide information screen representative of a program guide operating point in response to a first user control command; retrieving a hint from said storage means; and presenting said retrieved hint in a form recognizable by said user when said elapsed time equals a predetermined amount of time.

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